

## Section-A (MCQ's)

**Q.1** Choose the correct answer for each from the given option.

- (i) The image formed in a plane mirror is \_\_\_\_\_.  
 (a) Real (b) Inverted (c) Virtual and erect (d) Real and inverted
- (ii) A convex lens is \_\_\_\_\_.  
 (a) thinner at the centre (b) thicker at the centre  
 (c) a diverging lens (d) plane throughout
- (iii) According to Quantum theory, photons are \_\_\_\_\_.  
 (a) Waves (b) Electromagnetic waves  
 (c) Energy packets (d) particles
- (iv) Rain drops are formed spherical in shape due to one of the following properties of water.  
 (a) Surface tension (b) Viscosity  
 (c) Pressure (d) Air resistance
- (v) An element whose atoms have same atomic number but different mass number are called:  
 (a) Molecule (b) Secondary element  
 (c) Isotopes (d) None of these
- (vi) At S.T.P pure water boils at \_\_\_\_\_.  
 (a) 0 K (b) 100 K (c) 273 K (d) None of these
- (vii) If the fulcrum of a lever is between the effort and weight, it is a \_\_\_\_\_ class lever.  
 (a) First (b) Second (c) Third (d) None of these
- (viii) Power is defined as:  
 (a) Rate of change of Position (b) Rate of change of force  
 (c) Time rate of doing work (d) None of these
- (ix) The centripetal force is always directed to \_\_\_\_\_.  
 (a) Towards the centre of circle (b) Along the direction of motion  
 (c) Away from the centre of circle (d) None of these
- (x) The second condition of equilibrium states that:  
 (a)  $\sum P = 0$  (b)  $\sum \tau = 0$  (c)  $\sum F = 0$  (d) Both (b) and (c)
- (xi) If  $F_x$  and  $F_y$  are rectangular components of a force  $F$ , then  $\tan \theta = 0$  \_\_\_\_\_.  
 (a)  $\frac{F_x}{F_y}$  (b)  $\frac{F_y}{F_x}$  (c)  $F_x + F_y$  (d)  $F_x - F_y$
- (xii) Friction can be reduced by using ball bearing, because they \_\_\_\_\_.  
 (a) make the surface plane (b) make the surface grassy  
 (c) Convert sliding friction into rolling friction  
 (d) have no friction of their own
- (xiii)  $10^{-9}$  second is called \_\_\_\_\_.  
 (a) Desisecond (b) Millisecond  
 (c) Microsecond (d) Nanosecond
- (xiv) Ibn-ul-Haithem contribution toward \_\_\_\_\_ physics.  
 (a) Nuclear (b) Oceanographic (c) Optical (d) Thermal.
- (xv) If a current is flowing through a solenoid, then the north pole of the solenoid can be found by using \_\_\_\_\_ rule.  
 (a) Right hand (b) Left hand (c) Faraday's (d) Lenz's
- (xvi) If the length of the pendulum becomes four times, its time period will become.  
 (a) Four times (b) Twice (c) Three times (d) Eight times
- (xvii) The substance used as a medium between the two plates of a capacitor is known as \_\_\_\_\_.  
 (a) Conductor (b) Semi-Conductor (c) di-electric (d) electrolyte

## Section-B

## (Short Answer)

**Note:** Answer any EIGHT of the following questions. Each question carries 05 marks.

- Q.2 What is the contribution of Al-Haithem in the field of Physics?
- Q.3 Explain the First Condition of Equilibrium.
- Q.4 State and explain the Newton's Law of Gravitation.
- Q.5 Derive the equation :  $S = V_i t + \frac{1}{2} a t^2$
- Q.6 The radius of hydrogen atoms is  $0.53 \times 10^{-10}$  m. Convert it in cm, mm, and n.m.
- Q.7 What are rectangular components of a vector? How are they determined?
- Q.8 What is energy? Name the different forms of energy.
- Q.9 Define heat capacity and specific heat capacity.
- Q.10 Explain torque or moment of force.
- Q.11 Describe main causes of friction. Give the methods of reducing friction.
- Q.12 A proton of mass  $1.67 \times 10^{-27}$  kg is moving in a circle of radius 100 cm. An electromagnet applies a force of  $1 \times 10^{-12}$  N directed towards the centre of the circle. What is the velocity of the proton?
- Q.13 Differentiate between mass and weight.

## Section-C

## (Descriptive Answer)

**Note:** Answer any TWO of the following questions. Each question carries 14 marks.

- Q.14 (a) What is meant by regular and irregular reflection of light? Describe importance of irregular reflection in daily life.  
 (b) State and explain Pascal Law.
- Q.15 (a) What type of work is done by a movable pulley?  
 (b) How can a galvanometer be converted into voltmeter and ammeter?
- Q.16 (a) Explain series and parallel combination for resistance.  
 (b) 40 waves pass through a point on the surface of a pond in 2 seconds. Calculate the wave-length if the velocity of waves is  $3.5 \text{ ms}^{-1}$ .